

We claim:

1. A female coupling half for use with a male coupling half, said male coupling half includes a male valve, said female coupling half comprising: a female valve; a valve lock shaft affixed to said valve and movable therewith; a lock piston; said valve lock shaft
5 includes a recess; said lock piston includes a plurality of apertures; a plurality of detents reside respectively in said plurality of apertures of said lock piston; and, said detents interengaging said recess securing said male and female valves in open position.

2. A female coupling half for use with a male coupling half as claimed in claim 1, said female half further comprising: a lock sleeve, and said lock sleeve restraining said
10 detents from radial movement.

3. A female coupling half for use with a male coupling half as claimed in claim 2, said female half further comprising: a sliding sleeve; and, a spring operable between said lock sleeve and said sliding sleeve.

4. A female coupling half for use with a male coupling half as claimed in claim 3
15 wherein said valve lock shaft includes an exterior, a hollow inner core, and a passageway interconnecting said exterior and said hollow inner core.

5. A female coupling half for use with a male coupling half as claimed in claim 4 wherein said female valve is affixed to said valve lock shaft by a threaded
interconnection.

20 6. A female coupling half for use with a male coupling half as claimed in claim 4 wherein said female valve includes an end portion and an opening for receiving said male

valve member.

7. A female coupling half for use with a male coupling half as claimed in claim 6 wherein said end portion is flared.

8. A female coupling half for use with a male coupling half, said male coupling
5 half includes a male valve and a male body, said female coupling half comprising: an
outer body, a housing, and an inner body; said inner body slidably movable with respect
to said housing between a first position and a relief position; said housing residing
partially within said outer body forming an annular passageway therebetween; an inner
body adaptor affixed to said inner body; a dump valve body slidably engageable within
10 said inner body adaptor and movable with respect to said inner body adaptor; a lock
piston slidably engageable within said inner body adaptor and movable with respect to
said inner body adaptor; a dump valve; said dump valve being seated against said dump
valve body; a valve lock shaft slidably engageable within said lock piston; a female
valve; said female valve affixed to said valve lock shaft and movable therewith between a
15 first position and a relief position; said male body engaging said inner body member and
said male valve engaging said female valve urging said inner body member and said
female valve from said first positions to said relief positions upon insertion of said male
coupling half into said female coupling half, and, said dump valve being movable with
said inner body member and said inner body adaptor actuating said dump valve relieving
20 pressure within said female coupler half.

9. A female coupling half for use with a male coupling half as claimed in claim 8

wherein said insertion of said male coupling half into said female coupling half is performed by hand.

10. A female coupling half for use with a male coupling half as claimed in claim 8 wherein a first spring resides between said dump valve and said lock valve shaft and wherein a second spring resides between said dump valve body and said lock piston.

11. A female coupling half for use with a male coupling half as claimed in claim 8 further comprising a sliding sleeve slidably engageable with said inner body and said inner body adaptor and, a lock sleeve slidably engageable with said sliding sleeve and said lock piston.

12. A female coupling half for use with a male coupling half as claimed in claim 8, said female coupling half further comprising an outer adaptor affixed to said outer housing forming an annular passageway between said outer adaptor and said housing.

13. A female coupling half for use with a male coupling half as claimed in claim 12 wherein said housing includes a plurality of passageways therein.

14. A female coupling half for use with a male coupling half as claimed in claim 8 further comprising a vent passageway in said housing.

15. A female coupling half for use with a male coupling half, said male coupling half includes a male valve, said female coupling half comprising: a female valve; a valve lock shaft having a circumferential recess therein; a lock piston; said lock piston includes a plurality of circumferentially spaced apertures; a plurality of detents residing, respectively, in each of said circumferentially spaced apertures; a lock sleeve forcibly

restraining said detents in said recess of said valve lock shaft when said male and female coupling halves are coupled together; and, said detents removably residing in said circumferential recess of said valve lock shaft when said male and female coupling halves are uncoupled.

5 16. A female coupling half for use with a male coupling half, said male coupling half and said female coupling half being connected together and pressurized, said male coupling half includes a male valve, said female coupling half comprising: a female valve affixed to a valve lock shaft; said male and female valves being engaged with each other; a piston chamber; a lock piston slidably movable within said piston chamber; said valve
10 lock shaft and said lock piston each being slidably movable each with respect to each other; first and second seals preventing leakage between said valve lock shaft and said lock piston; said valve lock shaft having an exterior and a hollow interior, one end of said interior is closed by said female valve and the other end of said interior is substantially occluded; a relief passageway in said valve lock shaft interconnecting said hollow interior
15 of said valve lock shaft and said exterior of said valve lock shaft; said exterior of said valve lock shaft and said piston chamber pressurized; and, said piston chamber subsequently vented followed by venting of said hollow interior of said valve lock shaft followed by venting of said exterior of said valve lock shaft.

20 17. A female coupling half for use with a male coupling half, said male coupling half and said female coupling half being connected together and pressurized as claimed in claim 16, wherein said first seal is subjected to pressure in said piston chamber and said

second seal is subjected to pressure on said exterior of said valve lock shaft, and wherein said venting of said piston chamber creates a differential pressure across said valve lock shaft causing said valve lock shaft and said female valve to move toward said piston chamber and said male valve to move to a closed position while said male and female halves of the coupling are connected.

18. A female coupling half for use with a male coupling half as claimed in claim 17 wherein said male valve of said male coupling closes with pressure on it.

19. A female coupling half for use with a male coupling half, said male coupling half includes a male valve and a male body, said female coupling half comprising: a female valve; a retainer for securing a seal; said female valve includes a lip and a recess; said lip engages said seal when said coupling halves are disconnected; and, during engagement of said coupling said male body engages said retainer followed by said male valve engaging said recess and said lip of said female valve such that said seal is spaced apart from said lip of said female valve partially opening said female valve.

20. A female coupling half for use with a male coupling half as claimed in claim 19 wherein said female coupling half is pressurized opening said male valve and further opening said female valve.

21. A female coupling comprising a female half for use with a male coupling half; said male coupling half includes a body and a male valve, said female coupling half includes an inner body and a retainer; said inner body includes a detent carried in an aperture; said male body includes a circumferential recess therein; a locking sleeve

having a land; said male half and said female half being pressure locked together as said circumferential recess and said locking sleeve engage said detent when said coupling is pressurized; and, said male and female coupling halves being separable and said detent being movable with respect to said recess and said land on said locking sleeve when said coupling is not pressurized.

22. A coupling as claimed in claim 21 further comprising a plurality of detents carried by said inner body member in a respective plurality of apertures.

23. A process for coupling a male coupling half and a female coupling half together, said male coupling half includes a body and a male valve, said female coupling half includes an inner body and a female valve, comprising the steps of:

engaging said male body and said inner body of said female;

engaging said male valve and said female valve;

applying force to and urging said female valve and said inner body into the bore of said female coupling half;

venting said female coupling half;

releasing the force applied to said female valve and said inner body; and,

pressurizing said female half of said coupling opening said male and female valves.

24. A process for coupling a male coupling half and a female coupling half together as claimed in claim 23 further comprising the steps of:

locking said male and female valves in open position.

25. A process for uncoupling a male coupling half and a female coupling half, said male coupling half having a male valve and said female coupling half having a female valve, said valves in engagement with each other, said female coupling half having a first chamber interconnected to a second chamber by a passageway, comprising
5 the steps of:

reducing the pressure in said first chamber; and,
shuttling said male valve to its closed position.

26. A process for uncoupling a male coupling half and a female coupling half as claimed in claim 25, further comprising the step of:

10 pulling said coupling halves apart closing said female valves.